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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,139	12/12/2001	Jari Syrjarinne	944-001.57	4149

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EXAMINER

MULL, FRED H

ART UNIT

PAPER NUMBER

3662

DATE MAILED: 12/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/016,139

Applicant(s)

SYRJARINNE ET AL.

Examiner

Fred H. Mull

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2002 and 07 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

35 USC § 112 6th Paragraph

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

1. Claims 4-8 are interpreted by the examiner as invoking 35 USC 112 6th paragraph (means plus function). See MPEP § 2181-2186.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Lau '173.

In regard to claims 1, 4, and 7, Lin discloses a GPS IMM, i.e. performing at least a predetermined number of solutions of the state of motion of the receiver using a filter solution based on a mix of models of the motion of the receiver, a mix that is varied from one solution to the next according to a predetermined criteria, and of providing the model mix used in each

solution (Sections 2.1 and 3.2; Fig. 1). Lin fails to disclose powering down modules for a period of time.

Lau '173 discloses adopting a partial duty cycle indicating a percentage of time selected receiver components are power on (column 4, line 30 to column 5, line 45).

Lau '173 teaches the desirability of power savings through a standby mode in a typical GPS receiver (column 1, line 47-column 4, line 26). Lin teaches that a typical GPS receiver uses an extended Kalman filter (p. 4-1911, column 2, 1st full paragraph). Lin further teaches that to calculate position using his GPS IMM method, the receiver is required to handle double the computational burden of the typical extended Kalman filter method.

Since power saving is desirable on GPS receivers in general, and Lin's GPS receiver requires extra power to perform twice as many calculations, it would be obvious to one of ordinary skill in the art to equip the receiver of Lin with a known power-saving system, such as the power-saving standby mode of Lau '173. Additionally, Lau '173 teaches an adaptive standby period depending on mode of movement of the receiver (column 9, lines 30-52). Of all the power-saving standby mode methods out there, Lau '173 would particularly stand out because Liu's GPS IMM consists of various modes (models) of motion, and would allow greater power savings when the receiver is in a mode where the standby time can be shorter than that of a single-time-period-standby-mode-receiver. Since Lau '173 teaches an adaptive standby period depending on mode of movement of the receiver, and Liu teaches various modes of movement, it would be obvious to adapt the standby period of the combined receiver based on the mode of movement of the receiver.

In regard to claims 2-3 and 5-6 Lau '173 further discloses an RF front end and baseband processor module where said selected components include the RF front end or RF front end and baseband processor module (column 4, line 55 to column 5, line 5).

In regard to claim 8, it is well known to provide a computing resource external to the receiver for assisting in system calculations, which also saves mobile battery power. (See below.)

3. The examiner also finds the following references relevant:

Krasner (Method 3, column 4-5), Harrison '218, and Harrison '887, which disclose GPS power-saving standby modes which use external assistance.

Rodal, Lau '594, Welles, and Durboraw, which also disclose GPS power-saving standby modes.

Chen and Syrjarinne, which disclose GPS IMM systems.

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

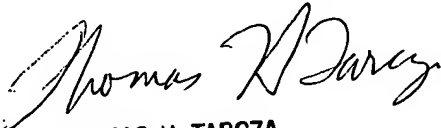
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

Fred H. Mull
Examiner
Art Unit 3662

FHM
December 4, 2002


THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600